

## Final Exam Sample Paper (Session 2017-18)

**Time: 3 Hr**

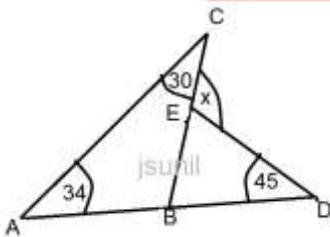
**Class: IX Subject: Mathematics**

**M.M:80**

Instruction: The question paper consists of 30 questions divided into four section A, B, C, and D. Section-A comprises of 6 questions of 1 mark each; Section-B comprises of 6 questions of 2 marks each; Section-C comprises of 10 questions of 3 marks each and section-D comprises of 8 questions of 4 marks each.

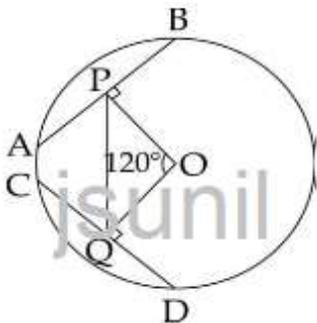
Section A (Q1 – Q-6)(1 x 6 = 6)

1. Two consecutive angles of a parallelogram are  $(x+60)^\circ$  and  $(2x+30)^\circ$  What special name can you give to this parallelogram ?
2. The volume of two hemisphere are in the ratio 27:125. Find the ratio of their radii.
3. Find the coefficient of x in the expansion of  $(x + 3)^3$ .
4. Simplify:  $\sqrt[4]{\sqrt[3]{2^2}}$
5. Which one is smaller?  $\sqrt[5]{10}$  or  $\sqrt[4]{9}$
6. Find Value of x from given fig.



Section B (Q7 – Q-12) (2 x 6 = 12)

7. Mention position of these points on Cartesian plane: A(2,-3);B(-4,-2) ;C(0,4),D(-4,0)
8. Find area of rhombus whose one side is 20m and one diagonal is 24m
9. If  $p = 5 + 2\sqrt{6}$  and  $x = \frac{1}{p}$ , then find value of  $p^2 + x^2$
10. In the given figure, AB and CD are two equal chords of a circle with centre O. OP and OQ are perpendiculars on chords AB and CD respectively. If  $\angle POQ = 120^\circ$ , find  $\angle APQ$ .



11. The class mark of a particular class is 6.5 and its class size is 3. Write the next 3 classes. If they are continuous.
12. ABCD is a square, X and Y are points on side AD and BC such that AY= BX. Prove that  $\angle XAY = \angle YBX$

Section C (Q13 – Q22) (3 x 10 = 30)

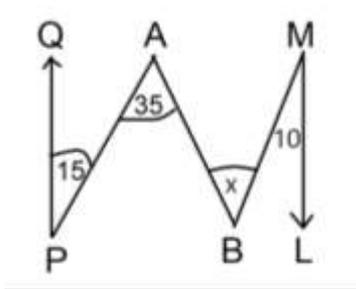
13. A bag contains 12 balls out of which  $x$  number of balls are white. If 6 more white balls are put in the bag, the probability of drawing a white ball will be double than that when the probability of drawing a white ball at random. Then the value of  $x$  [Ans : 3]

14. the mean of following distribution is 50, find the value of  $a$  and hence find the frequency of 30 and 70 ?

x	10	30	50	70	90	
f	17	$(5a+3)$	32	$(7a-11)$	19	Ans: $a = 5; 28, 24$

15. Find the percentage increase in area of triangle if its each side is doubled (ans: 300%)

16. In fig QPIIML Find value of  $x$



17. The auto fare in a city are as follows : For the first kilometre it is Rs.10 and for subsequent distance is Rs. 8 per km. Taking the distance as  $y$  km. and total fare as Rs.  $x$ , write a linear equation for this and draw the graph. Also find the fare of 15 km.

18. Construct a right angle triangle whose base is of length 4 cm and length of perpendicular is 3 cm. Now construct perpendicular bisectors of any two sides. Where these bisectors intersect?

19. There is a solid cube which has been cut into two cuboids of equal volumes. Find the ratio of the total surface area of one of the cuboids to that of the given cube.

20. Rationalize the denominator of  $\frac{y^2}{\sqrt{x^2+y^2} + x}$

21. In figure, the sides AB and AC of  $\triangle ABC$  are produced to points E and D respectively. If bisectors BO and CO of  $\angle CBE$  and  $\angle BCD$  respectively meet at a point O, then prove that  $\angle BOC = 90^\circ - \frac{1}{2} \angle BAC$

22. Simplify :  $\sqrt[5]{x^4 \sqrt[4]{x^3 \sqrt[3]{x^2 \sqrt{x}}}}$

SECTION-D(Q23 – Q30)(6 x 4 = 24)

23. PQRS is a trapezium with PQ||RS. X and Y are points on PS and RQ such that SX = XP and RY = YQ. If SR = 40cm and PQ = 60cm, find the ratio ar(SRYX) : ar(PQRS).

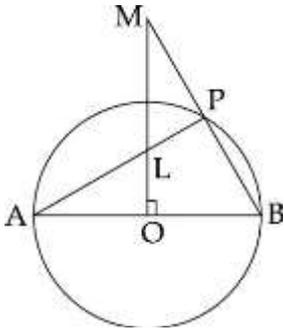
24. Opposite angles of a parallelogram are  $2x$  and  $3y$ . Write a linear equation which satisfies this data. Draw the graph for the same.

25. If the arms of one angle are respectively parallel to the arms of another angle then prove that the angles are either equal or supplementary.

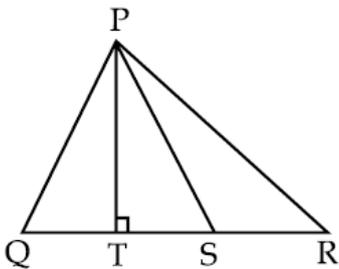
26. If the areas of the three adjacent faces of a cuboidal wooden box are  $120 \text{ cm}^2$ ,  $72 \text{ cm}^2$  and  $60 \text{ cm}^2$  respectively, then find the dimension and volume of the box.

27. In the given figure, O is the centre of the circle and OLM is perpendicular to AOB prove that:

- (i) A, O, P and M are concyclic (ii)  $\angle OAP = \angle OMB$  (iii) P, L, O and B are concyclic



27. in fig. PS is bisector of  $\angle PQR$  and  $PT \perp QR$ . Show that  $\angle TPS = \frac{1}{2}(\angle Q - \angle R)$



28. Q. 4. If  $x = \frac{1}{\sqrt{a} - \sqrt{b}}$  Show that  $(a - b)^2 x^2 + (a - b)x - (a + b) = \sqrt{a} + \sqrt{b} + 2\sqrt{a}\sqrt{b}$

OR, if  $a + b + c = 0$  show that  $a^4 + b^4 + c^4 = 2(b^2c^2 + c^2a^2 + a^2b^2)$

29. Find the value of a and b so that  $(x + 1)$  and  $(x - 1)$  are factors of  $x^4 + ax^3 - 3x^2 + 2x + b$ .

30. A small indoor greenhouse (herbarium) is made entirely of glass panes (including base) held together with tape. It is 30 cm long, 25 cm wide and 25 cm high.

- (i) What is the area of the glass? (ii) How much of tape is needed for all the 12 edges?

OR, A river 3 m deep and 40 m wide is flowing at the rate of 2 km per hour. How much water will fall into the sea in a minute?